

In the Waitewhena Valley, north of Ohura, the thickest coal occurs on the western side. Marco Creek and Mangarohe Stream show a practically continuous outcrop of a seam nowhere less than 10 ft. thick. From the Mangarohe Stream north to the bridge over the Waitewhena the thickness varies from 12 ft. to 9 ft. Directly east of Wa Trig. the coal thins to less than 6 ft., but thickens to 12 ft. at Knight's Mine, 38 chains north-east of the trig., and extends 60 chains farther northward with an average thickness of 9 ft. Near the source of the Waitewhena Stream the coal, here from 5 ft. to 10 ft. thick, as it approaches the Aria fault has a strong dip to the east. In the Pura Stream, immediately south of Marco Creek, most of the outcrops show more than 6 ft. of coal, but south from this locality the seam is usually less than 6 ft. in thickness. On the eastern side of the Waitewhena Valley a thick seam can be traced from the mouth of Awawaro Stream for 55 chains to the south, but elsewhere few exposures of coal are more than 6 ft. thick.

The headwater streams of the Panirau, a large branch of the Mokau River, rise on the main ridge west of Waitewhena Valley. In this locality are many outcrops of coal, almost all over 6 ft. and most of them at least 10 ft. thick. From north to south, as the crow flies, these outcrops occur over a length of four miles. There is a large amount of workable coal in the ridge between the Waitewhena and Panirau basins.

In the Parahaka Valley the best outcrops extend from 14 chains north-north-east of Pukerewa Trig. south along the edge of the Aria fault to east of Munro Trig., a distance of about one mile. Here five outcrops of 8 ft. or more were observed. The seam dips strongly to the east, and in a short distance passes below drainage level. Two miles eastward, where the coal-horizon is again brought to the surface by faulting, no coal is present. In this locality the amount of workable coal to the dip can be determined only by boring.

At a point in the Mangaohutu Valley, about two miles and a half south-east of Aria, a coal-seam fully 17 ft. thick has been worked by Mr. A. Morgan from adits. A few chains from the entrances to the mine the seam is cut off by a north-north-east-striking fault, east of which it has not yet been found. An outcrop showing 6 ft. (no roof observed) of coal, 50 chains west-south-west from the mine and 230 ft. above it, probably belongs to the same seam. Fifteen chains north from this outcrop a seam at the same high level is indicated by fragments of coal; but farther to the north no trace of coal was observed at or near this height. The evidence indicates either that the higher seam has thinned just north of the coal-fragments and that the seam worked in Morgan's Mine is in a down-thrown block, or that another fault lets down the strip of country between the fragmentary coal and Morgan's Mine to below the level of the worked seam. Owing to the covering of bush and heavy fern and manuka, prospecting is difficult.

Roadmaking-material.—The subdivision is poorly supplied with good roadmaking-material. At present the bulk of it is obtained from the beds of the Mangakara Stream and of the Ongarue and Wanganui rivers. In the Pura Valley a bed of conglomerate lying above the coal, consisting of greywacke pebbles loosely held together by sandstone, is now being opened up by the Ohura County Council. A similar deposit in the Weraroa Stream is four miles and a half from a road. The bands of mudstone and sandstone cemented by calcite, outcropping near the end of the Waitetaura Road, Tangitu Survey District, would make a fair road. A concretionary band at the base of the sandstone of the Mokau beds, where the coal is absent, and the conglomerate at the base of the Mohakatino beds contain too many comparatively soft sandstone boulders and pebbles to form a good road-surface.

4. TE PUKE GOLDFIELD.

(By P. G. MORGAN.)

Between the 24th and 28th November the writer visited Te Puke in order to examine the area south-west of the township where mining is at present being carried on by Muir's Gold-reefs (Limited). The new treatment plant, consisting of a 20-stamp battery with five tube mills and a modern cyanide plant, had just been erected, and crushing with three shifts began about the 1st December. The battery is situated a little to the north-east of the main adit (No. 2 level), and is approximately 440 ft. above sea-level.

The area containing the lodes worked or proposed to be worked by the company is included in the Te Puke Mining District as demarcated by J. A. Bartrum.* In his report Mr. Bartrum describes the rocks enclosing the Te Puke lodes as consisting wholly of hypersthene augite andesite, but samples of the wall-rock of Muir's reef, the lode now being worked, appear under the microscope to be quartz-andesite (or dacite) tuff, more or less silicified. One section shows fragments of spherulites. The sections have not been closely examined, and possibly in part they represent lavas brecciated during or after consolidation rather than true tuffs. This question is of little account from a mining point of view, but the presence of quartz-grains and of spherulites, linking the rocks examined with the dacites, is noteworthy. Of equal or even greater importance is the occurrence of the variety of potash feldspar known as "valencianite" in the little veinlets that traverse the sections, and the almost total conversion of the original lime-soda feldspars into secondary potash feldspar. Thus the wall-rocks of the Te Puke lodes are found to have undergone exactly the same kind of alteration as the wall-rocks of the Waihi lodes.

Muir's lode, as seen in the bottom or No. 2 level, in the intermediate level, and in No. 1 level (about 200 ft. above No. 2), is a promising ore-body. It strikes a little east of north, and dips at

* J. A. Bartrum: "The Geology of the Te Puke District," N.Z. Geol. Surv. 7th Ann. Rep., C.-2, pp. 133-42, 1913, with map.